

Effect of cold storage on germination of stratified Ocala sand pine seed
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Ocala sand pine (*Pinus clausa* var. *clausa* D. B. Ward) is native to the marine deposited sandhills area of central Florida. Frequently occurring droughty conditions are a major obstacle to artificial regeneration, significantly delaying seed germination (Barnett 1973) and increasing seed predation. Stratification has been shown to improve both the speed and completeness of seed germination in low moisture conditions (Outcalt 1991). The objective of this study was to determine if stratified seed retained this attribute of improved germination in stressful conditions following redrying and differing periods of cold storage.

After a 24-hour aerated water soak at 25°C, excess water was drained and seed were stored moist for 21 days at 4°C. Following the moist stratification period, seed were allowed to air dry for 10 days at 25°C. A set of control seed was exposed to the same light and temperature conditions, but without any added water. A subsample of control and treated seed were selected and sown in germination boxes in sand at moisture contents by dry weight of 3, 5, and 7 percent using a randomized block split-plot design. The remainder of the seed was placed in cold storage with subsamples drawn and sown as above after 30 and 90 days of storage.

Seed stratification significantly increased total germination compared with control seed at all storage times (figure 1). The apparent decline in germination at 30 days was the result of increased moisture loss caused by a malfunction in the temperature control for the germination room. The rate of germination was also faster for treated seed, with the first germinates appearing after 5 days while the control seeds first appeared on day 7. Control seed had less than a 1 percent total germination at 3 percent sand moisture, 14 percent in 5 percent moisture, and 34 percent in 7 percent moisture. Treated seed averaged 8, 29, and 53 percent germination at the same moisture levels. Redrying and storage for up to 90 days did not decrease the superior germination of stratified versus untreated Ocala sand pine seed, nor did it reduce the ability of stratified seed to germinate in low moisture conditions. Thus, seed could be stratified and stored for use during the 2 month sowing season.

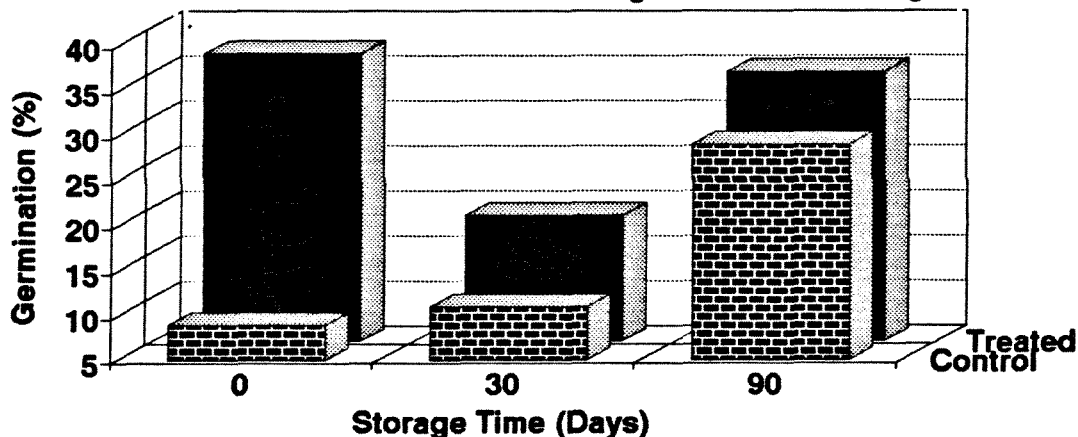


Figure 1. Effect of treatment and storage on germination of Ocala sand pine seed.

References

- Barnett, J. P. 1973. Sand pine: cone and seed traits. In Proc. Sand pine symp. Gen. Tech. Rep. SE-2, USDA Forest Service, Washington, D.C. pp. 55-66.
- Outcalt, K. W. 1991. Stratification increases germination of Ocala sand pine seed in dry soil. Seed Sci. & Technol. 19:511-517.